



Feature Article

Health Education Efforts in Uncertain Times: Helping to Ensure Healthy Pregnancies in a Time of Crisis

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ABSTRACT

Hurricane Katrina caused immense upheaval and disrupted many lives. Among those affected were pregnant women. A public service announcement, website content, and a fact sheet were developed to inform pregnant women about the issues that could potentially affect their health and that of their babies. The aim of these products was to provide health messages that captured the attention of the intended audience amid the challenging environment of an emergency situation. Message dissemination methods—television, radio, and websites—were carefully selected, because using a combination of outlets is often helpful in reaching the widest audience possible.

BACKGROUND

The 2005 hurricane season was one of the most active in recorded history. Among the most devastating storms to hit the United States was Hurricane Katrina, which made landfall on August 29, 2005. Katrina caused immense devastation to natural resources, land, homes, and lives, resulting in the displacement of hundreds of thousands of individuals to new states or evacuation centers.^{1,2} Among those displaced were pregnant women. Pregnant women need special consideration in such situations because the effects of a disaster and resulting displacement can put these women at increased risk for adverse pregnancy outcomes. Factors such as limited access to clean water, interrupted access to medications, increased risk for infections related to crowded emergency facilities, disruption of prenatal care, and increased stress related to an uncertain future need to be considered when caring for displaced pregnant women. Although these factors can affect all groups, pregnant women at risk also carry developing babies

that are at risk.

In the aftermath of Katrina, many Gulf Coast clinics, hospitals, and private physicians' offices were closed or understaffed and, therefore, not accessible to their patients. Public health officials and response teams were dispatched to help provide much needed health care to those temporarily residing in evacuation shelters that had been set up in various cities throughout the nation.³ These professionals often had to address a myriad of health issues with limited resources and the added strain caused by a disaster response situation. Finding the most effective and efficient ways to provide important health information to individuals in a crisis situation such as Katrina can be very challenging. Reaching special populations—who might have unique needs and require more tailored health messages during an emergency situation—can add to the difficulty.

Pregnant women in particular need specific information related to their condition. During an emergency situation, however,

they might not have access to traditional health care services or information channels. Written materials such as fact sheets, print advertisements, and posters can be used to disseminate health information. Using a combination of materials that will

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work best in emergency situations is usually optimal, though, particularly when dealing with an audience of varying socioeconomic backgrounds and education levels. Creating health information that will be easily understood by an audience such as pregnant women, and making use of outlets through which this information is most accessible, can help to ensure that a health message achieves its broadest reach.

SIGNIFICANCE OF THE ISSUE

Understanding Health Messages

Health information often includes technical jargon and concepts that are hard to understand, regardless of one's level of education or literacy; however, reading, understanding, and using health information can be even more daunting for those with limited literacy skills. Findings from the National Adult Literacy Survey indicate that almost half of the U.S. adult population has limited literacy skills, and one-quarter is functionally illiterate.⁴ Additionally, factors that often accompany an emergency situation such as stress, fear, and confusion can exacerbate people's existing struggle to read, understand, and use information. The public health community should be reminded of the vital importance of developing health messages that are simple and appropriate and disseminating these messages through channels that will foster understanding and use among the intended audience.

The Role of Mass Media and the Internet

Without a doubt, mass media play a major role in people's everyday lives. Just how critical a role they play is evident in how routine it has become to watch television, listen to the radio, surf the internet, and read newspapers and magazines.⁵ Not only do media outlets provide information about everyday occurrences, they are also primary sources of information during times of emergency and can play a key role in how the public responds. Radio and television announcements can inform the public about what is happening and advise them about what to do,⁶ while the visual

instruction that a television announcement provides can help address literacy limitations among a given audience. In short, the media can play a major role in educating and informing the public about important health issues.^{5,7}

As for the internet, millions of people in the United States access health information online, and there are more than 70,000 websites that provide such information.⁸ Use of the internet to obtain health information has expanded greatly and continues to grow, largely due to public perceptions of its overall convenience, anonymity, and diversity of information.⁸ Many health agencies and organizations also use the internet as a major tool to communicate important health education information, local health alerts, and agency programs and services. In *Healthy People 2010: Objectives for Improving Health*,⁹ health communication is recognized as a critical element in improving the health of the nation. Similar to other media outlets such as television and radio, the internet can be a valuable tool for reaching a wide audience with important health information.

When Disaster Strikes

The Centers for Disease Control and Prevention (CDC) were among the many federal, state, and local agencies that mobilized to respond in a variety of post-Katrina emergency response efforts.¹ News coverage of the hurricane evacuation shelters showed walls covered with pictures of missing relatives, announcements, and newspaper clippings. CDC response personnel working in the shelters indicated that the shelter walls were also blanketed with posters and print advertisements about a variety of important health messages, healthy behaviors, and government-provided services that displaced persons needed to know about. The sheer volume of these postings made any one print material virtually invisible (James Kucik, personal communication, September 2005).

For people with limited literacy skills residing in such an environment, having to rely solely on written materials for important health information can be overwhelming and likely impossible, especially during

times of stress. However, health messages delivered through television outlets might be an effective option because of their visual appeal, especially for those with limited literacy skills.¹⁰ Radio outlets can also be a good way to reach the intended audience, particularly since they can be the most readily accessible media outlet during emergency situations. Furthermore, depending on the reach of the stations, television and radio announcements have the potential to affect a geographically diverse audience as well. In the weeks following Katrina, many individuals began to move out from the shelters set up in various cities and into the surrounding areas. Using media outlets in such areas can help maximize the chance that messages are heard by displaced populations.

At CDC, in an effort to address the issues that could potentially impact pregnant women affected by the hurricane, a collaborative committee was formed with researchers from the National Center on Birth Defects and Developmental Disabilities (NCBDDD) and the National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP). Although a number of efforts were carried out, this article focuses on efforts related to the development of public service announcements (PSAs), website content, and an accompanying fact sheet aimed at the population of displaced pregnant women.

MESSAGE DEVELOPMENT

Public Service Announcements

To reach displaced pregnant women with important health messages, researchers from NCBDDD, NCCDPHP, and the CDC Foundation collaborated with a private creative firm to develop television and radio PSAs. The primary goal of this process was to create messages that could educate pregnant women about the basic healthy behaviors all displaced people need to be aware of, with special emphasis on those practices that are most important during pregnancy.

During an initial subcommittee meeting, several ideas were generated about how to reach an audience of displaced pregnant



women. The women's ability to carry out the behavior, and the clarity, brevity, and timeliness of the messages were considered to be of the utmost importance. PSAs and website development were suggested as potential strategies for information dissemination. Previously, representatives of the private creative firm had contacted NCBDDD to express their willingness to help with any efforts in which their expertise in message development and communication could be useful. Subcommittee members later contacted the firm and asked for its voluntary participation in this effort.

Because television and radio PSAs tend to be brief and are aired during those times that are available in a station's schedule, researchers wanted to ensure that the messages were clear and concise, and that action steps could be easily understood and followed by the intended audience. The subcommittee members met to review the specific issues that could potentially affect displaced pregnant women and to prioritize those topics to meet PSA time restrictions. Important topics such as medication use, prenatal care visits, chronic health conditions, breastfeeding, nutrition, basic hygiene, and mental health were all mentioned as health issues that could affect this population. The broader list was then narrowed down to those health messages that could best stand alone, without need for further instruction, and that reinforced behaviors the audience could feasibly accomplish regardless of their surrounding environment.

In the end, it was decided that one television PSA, one general radio PSA, and four topic-specific radio PSAs would be developed. From the start, the researchers wanted to ensure that the messages were developed using plain language, avoiding medical jargon, and that the television PSA used images that were familiar and appealing to the intended audience. Staff from the creative firm were also cognizant of these issues and made sure that the products developed would meet these standards.

To obtain some feedback from the target audience, CDC researchers and staff from the creative firm discussed the possibility

of testing the draft PSA text and visuals with Hurricane Katrina evacuees. This would have had to be done very quickly, however, because evacuees were beginning to be moved out of shelters. Because of resource limitations, along with the time it would take to obtain the proper clearances from the individual shelters, this audience testing proved to be unfeasible. Instead, the creative firm staff conducted one-on-one interviews with 11 women of childbearing age living in New York City, 9 of whom were pregnant at the time. These women's socio-economic and demographic situation was likely to be similar to that of the evacuees, and each woman was aware of Hurricane Katrina. The women were shown the television PSA in storyboard form while the voiceover was read by a staff member from the creative firm, with the corresponding images appearing onscreen. The women were then asked their impressions of the PSA. Next, the women were read the text from one of the radio PSAs and asked for their feedback on that as well.

Overall, they had very positive feedback about both the television and radio PSAs, and fully understood the messages the spots were intended to convey (Appendix B). Many of them felt that the PSA messages served as effective reminders for how women should be taking care of themselves during pregnancy, and several of the responses indicated the women were able to relate to the visuals and the messages. Based on feedback from the interviews, as well as further comments from the CDC subcommittee members, the PSAs were finalized.

The final PSA, developed for both television and radio, was 30 seconds in length (Appendix A). The television PSA and the general radio PSA focused on five primary health behaviors: speaking with a health care provider about getting prenatal care, eating healthy foods, drinking safe water, resting physically and emotionally, and hand washing. An existing CDC emergency response hotline was provided with updated information pertaining to the special needs of pregnant women, and the hotline number was given as a contact for more

information at the end of the PSA. The topic-specific radio PSAs were developed to incorporate more in-depth information about the health behaviors presented in the general PSA. These four PSAs focused on (1) seeking regular prenatal care visits with a health care provider; (2) avoiding alcohol and caffeine, eating a healthy diet, seeking out food programs that might be available to pregnant women, and drinking clean water; (3) resting one's head, heart, and feet, and the importance of talking about one's feelings; and (4) keeping one's hands clean by washing with soap and water after using the restroom, changing diapers, and before meals. Once again, contact information was provided for the listener at the end of each radio announcement.

Website and Accompanying Fact Sheet

To broaden the reach of the developed PSAs and expand the number and specificity of health messages that could be covered, researchers developed website content and an accompanying fact sheet for displaced pregnant women. The initial aim of the website was to reach those displaced pregnant women who had access to a computer and internet service, while the aim of the accompanying fact sheet was to reach those who did not have such access, who might not have heard the messages delivered by the PSAs, or who wanted more information about a variety of health topics. The fact sheet was translated into Spanish in an effort to also reach Spanish-speaking members of the target audience. Researchers were aware that written materials could be a challenge for those with limited literacy skills; therefore, special efforts were made to ensure that these materials were written at a sixth-to-seventh-grade reading level.

Upon further consideration, the researchers agreed that the purpose of the fact sheet and website would be twofold. They would be suitable not only for pregnant women, but also for health care emergency response personnel working in the hurricane-affected areas or in areas with high numbers of displaced people. Although researchers were aware that access to a functioning computer following an emergency situation is most



Appendix A. Final Public Service Announcement (Television and General Radio)

your baby's home



Maybe you couldn't protect your home

but you can protect this home,



the home of your unborn baby...you.

If you are pregnant or think you might be,
speak to a nurse or doctor to get the care
you both need.

Eat...healthy foods



Drink...safe water

Rest...your head, heart, feet.

Eat...healthy foods



Call...1 800 CDC INFO and

Protect your baby's home. You.



Appendix B. Interview Responses Given by Women of Childbearing Age Living in New York City

Message Recall:

"It said drink clean water, eat healthy food and wash your hands to protect the baby's home. There's no one else to protect that, only the mother."

—Pregnant Hispanic female in her late teens

"I need to protect me—eat healthy, no drugs, take care of me. . . . The message gave me goose bumps. There are a lot of things I need to do differently—change . . . how I eat, how I sleep."

—Pregnant African American female in her twenties

"Do what you need to do so your baby will be born healthy."

—African American female in her forties

"[The message is] protect new life. . . . Even if everything around you is out of control . . . you have control of what you have inside. It's an important message."

—Potentially pregnant African American female in her twenties

"Maybe I need to do some more things in terms of protecting my baby."

—Pregnant African American female in her twenties

Identifying with the Visuals:

"I know I'm responsible for another life, but all this time I just thought of a child and me [as two separate things]. [The PSA] made me think of [the baby] as a part of me. I need to pay a lot more attention. I felt like it connected me to my baby. Since I saw the foot, I no longer think of him as a stone in the bottom of my tummy. The foot humanized it. [I thought,] This is actually a human in me, one that I'm responsible for."

—Pregnant African American female in her twenties

"When I was about three months [pregnant], I forgot to do these things, and I got contractions at 5 months. I knew it, but I forgot. [If I had seen this PSA,] it would have reminded me [to do the right things]."

—Pregnant Hispanic female in her late teens

"I saw a belly like me."

—Pregnant Hispanic female in her late teens

"The foot reminds me that someone is in there. It says, 'Take care.'"

—Pregnant female, unknown ethnicity, in her late teens

often limited, the website content was developed in an effort to complement the television and radio PSAs, and was appropriate for those individuals who did have access and to health care providers as well.

MESSAGE DISSEMINATION

Public Service Announcements

Both radio and television PSAs were distributed to media outlets in ten cities

that had become destinations for large numbers of displaced evacuees: Little Rock, Arkansas; Atlanta, Georgia; Baton Rouge and New Orleans, Louisiana; Jackson, Mississippi; Austin, Dallas, San Antonio, and Houston, Texas; and Memphis, Tennessee. Although efforts were made by the private creative firm to track weekly placement of the PSAs in each of these cities, many of the smaller, local television stations were unable

to determine the exact number of times they had aired the PSAs. Similarly, many of the stations that had disseminated the PSAs to their affiliates were unable to verify the number of times these affiliates had placed the PSAs. Further, large national networks such as CNN did report nationwide placements but were also unable to provide exact numbers. The private creative firm made an effort to track radio PSA placements as well, but could not verify exact numbers with the stations. Because the stations all aired the PSAs voluntarily, with no formal contract, it was not possible to enforce tracking. Therefore, the only verification of placement that researchers had was that several stations indicated to the private creative firm that they had indeed played the PSAs, many on several occasions.

Website and Accompanying Fact Sheet

Relevant information was posted on the website in September 2005, one month after the hurricane. Contact information for the Organization of Teratology Information Services was provided on the website as a source for more information on a particular health topic. The downloadable English and Spanish one-page fact sheet was also made available on the main CDC hurricane website. As was the case in the development and distribution of the PSAs, time and resources were important barriers to providing extensive evaluation and tracking information. The main priority for the website and fact sheet components of the project was to provide clear, accurate information in a timely and efficient manner in order to complement and enhance the information provided by the PSAs. Making this additional information available as soon as possible after the hurricane was critical. Toward this end, evaluation was limited to tracking the number of visits to the website and the number of times the fact sheets had been downloaded.

Whereas the demographics of the individuals who accessed this information in the aftermath of the disaster are unknown, it was possible to track the number of hits received on the "frequently asked questions" (FAQs) page and the number of one-page English



fact sheets downloaded from September 21, 2005, through February 28, 2006. The Spanish-language fact sheet became available on October 13, 2005. As of February 28, 2006, the NCBDDD Hurricane Katrina page on pregnancy had received 3,211 hits. The FAQs page had received 3,220 hits, and the fact sheets had been downloaded 421 times (171 English and 250 Spanish). The peak month for hits to the FAQs page was January 2006 (794 hits), while the peak for the NCBDDD main page on pregnancy was October 2005 (868 hits).

LESSONS LEARNED

The overall aim of this project was to create relevant messages that could break through the clutter of competing messages and help inform pregnant women about how to keep themselves and their babies healthy in the aftermath of Hurricane Katrina. Bringing together staff from the private creative firm (with their expertise in framing and designing messages to be culturally, emotionally, and visually appealing) and researchers from CDC (with their expertise in the health content arena) was critical to this endeavor. The result of this partnership was the development and dissemination of "evergreen" television and radio products, that is, materials that can be used again in response to future emergencies. The website content and accompanying fact sheets were developed solely by CDC researchers; however, they were made to complement existing Hurricane response-related information on the main CDC website, as well as expand on those messages being delivered in the PSAs. The website information and fact sheet were also developed with the intention of being used again in the future, as necessary. Further, both CDC researchers and the private creative firm staff were very aware of the importance of developing materials using plain language that would be suitable for audiences of all literacy levels, as well as using a combination of approaches to maximize the reach and frequency of the messages.

Although researchers were unable to conduct testing with a target audience of pregnant women displaced by Katrina, they

were able to conduct one-on-one interviews with a small sample of women of similar demographics. Although this was not ideal, it did help researchers gauge how well the PSA messages and visuals would be received by a sample of women, many of whom were pregnant. The messages and visuals were very well received, and the women were able to understand and relate to the concepts being presented. This helped provide the researchers with confidence to move forward with the PSAs.

Although resource and time limitations only allowed for the development of English-language PSAs, a Spanish-language fact sheet was created for downloading from the internet. Tracking information indicated that more Spanish-language fact sheets were downloaded than English-language. This finding underscores the need for emergency response materials that are developed in a variety of languages and accessible to different audiences.

There were several limitations to this project. First, no structured testing of the developed messages was conducted. Obtaining clearance from the shelters to conduct focus group testing of the developed messages with the target audience would have been a significantly lengthy process. Because of the time-sensitive information presented in the PSAs and the quick turnaround time needed to reach the target audience, delaying the process any further could have negatively affected the researchers' ability to reach the intended audience. Second, setting up a systemized tracking system with television and radio stations was not possible. The stations voluntarily aired the PSAs, and requiring that they track and report those placements was therefore not feasible. Unfortunately, the lack of solid tracking measures for the television and radio PSAs limited the researchers' ability to determine their effectiveness. Third, time constraints also affected the website information and fact sheets. Due to these constraints, researchers were unable to pretest the draft of the information with the target audience before posting to the website. Tracking was available for the website and fact sheet, however, indicat-

ing a significant interest in these materials. This information helps justify the use of the internet and fact sheets as viable sources of health information for displaced audiences, as well as for health care providers serving these audiences. Finally, the demographic and audience characteristics of Hurricane Katrina evacuees might be different from those of people who might require this information in future emergency situations. Therefore, the images, words, and design of the PSAs might not be as effective with those audiences. Thus, whether or not the messages and visuals truly are "evergreen" and generalizable to other populations still needs to be evaluated.

CONCLUSION

Reaching a specific audience with effective messages following a disaster is challenging. Because of the nature of such an emergency situation, time constraints are a significant barrier. Having partners in place who are prepared to work collaboratively to most effectively reach the target population can help in the development and implementation of a successful emergency response effort. Messages designed to reach a specific population must be tailored to meet their unique needs. Additionally, emergency response initiatives should incorporate the development of health messages for specific audiences that can then be adapted for future scenarios.

The efforts presented in this article focus on the use of a combination of approaches to disseminate important health messages to a select target audience. Because this was a highly mobile audience, with many individuals entering and leaving evacuation sites daily, using a number of outlets helped maximize the chance that the messages would be heard by the intended audience. Regardless of the outlet used, it is of utmost importance to be able to gather information about the specific audience, and in turn to use this information in developing targeted educational materials. Assessment tools used during and after emergency situations should include questions that capture the characteristics and needs of special



populations, such as pregnant women, so that appropriate communication messages are developed and urgent health needs are addressed.

Using plain language in the PSAs, as well as on the website and fact sheet, also helped ensure that the messages would be understood. Further, having materials available in two languages helped to broaden the reach of the messages. Overall, the products developed in this emergency response effort have the potential to be used again, if necessary—either in combination, or as standalone vehicles of health information.

In times of emergency, individuals are often bombarded with television and radio reports, newspaper stories, pamphlets and brochures, and online coverage. Being able to develop a message that is credible, targeted, and appealing, and using an effective dissemination outlet for this message that can break through this clutter, can be critical to ensuring that important health information is heard, and that action is taken.

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*CDC does not imply endorsement of this company.

Note: For more information about CDC's Emergency Preparedness and Response efforts visit <http://www.cdc.gov>.

DISCLAIMER

The findings and conclusions in this report are those of the authors and do not necessarily represent the views of the Centers for Disease Control and Prevention.

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